Clarion

SERVICE MANUAL

[EQUALIZER BOOSTER]

MODEL 300EQB-2

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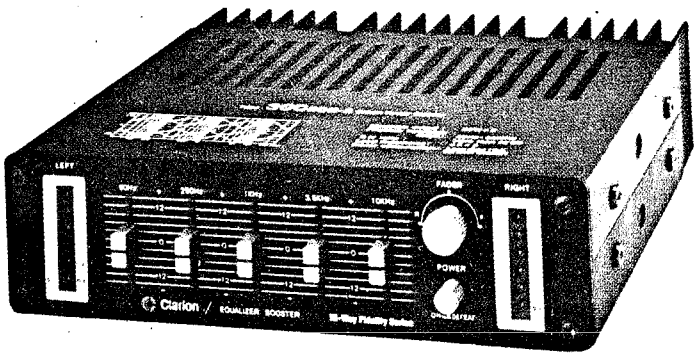


■ SPECIFICATIONS:

EQUALIZER SECTION

Control frequencies:	60 Hz, 250 Hz, 1 kHz, 3.5 kHz, 10 kHz
Control range:	12 dB (min.), boost or cut
Control type:	Slide : center detent for 'flat' setting

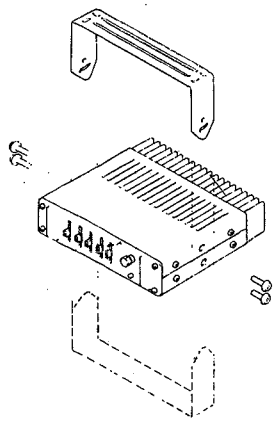
BOOSTER AMPLIFIER SECTION (Equalizer Set Flat)

Power output:	30 watts RMS per channel: Less than 1% THD.
	35 watts RMS per channel: Peak power output
	4 ohm load, 14V DC
Frequency response:	40 to 30,000 Hz
Amplifier:	Transformer-coupled
Voltage gain:	Nominal + 14 dB (2.5V RMS input for rated output)
Input impedance:	47 ohms (DC coupled)
Load impedance:	Minimum load per channel, 4 ohms (2-speaker system — min. 4 ohms per output lead) (4-speaker system — min. 8 ohms per output lead)
Power supply voltage:	DC 14 V (10.8 V-15.6 V) negative (—) ground
Power consumption:	Idle: less than 0.6 A Max. output: less than 10A
Semiconductors:	6 IC's, 16 TR's, 12 LED's 6 DIODES
Weight:	2.5 kg (5.5 lbs.)
Dimensions:	W: 180 mm (7.1") H: 47 mm (1.85") D: 165 mm (6.5")

■CAUTION:

1. The 300EQB-2 may not be connected directly to a car radio/stereo of which power amplifier requires floating ground. If your car stereo is floating ground type, use C-R coupling circuit to prevent damage of your car stereo.
2. For best results, speakers should be rated to safely handle the additional power output provided by the 300EQB-2 Speakers with a low power rating may be damaged.
3. This equipment is intended for use in 12-volt DC negative ground electrical systems only. The use of voltage or polarity converters is discouraged.
   Heavy gauge wire should be used when connecting the power and ground leads.
3. As much as possible, avoid mounting locations which would subject the unit to high temperature or expose the unit to water.

■INSTALLATION:



■FEATURES:

*** 5-BAND GRAPHIC EQUALIZER**
Equalizer permits limitless sound-shaping possibilities and visually displays frequency-response-curve.

*** POWERFUL 30W(RMS)-35W PEAK/CHANNEL**
Advanced-design amplifier provides a full 30 watts RMS per channel with very low distortion.

*** FRONT/REAR SPEAKER FADER**
Built-in fader control for four-speaker installations balances sound between front speakers and rear speakers.

*** COMPACT SIZE**
Requires minimum mounting space. Bracket allows under/over mounting.

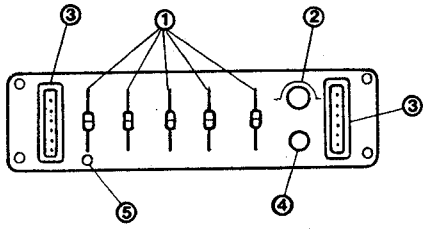
*** BEFORE/AFTER COMPARISON**
Power switch allows instantaneous comparisons of the system with and without the 300 EQB-2

*** SHORT CIRCUIT PROTECTION**
This unit has built-in self-protection for the output stages in cases of inadvertent shorting or grounding of the output leads. Should the output leads be shorted or grounded, the unit automatically shuts its output stages off and thus nothing is heard on the speakers. To reset the self-protection circuitry, the300EQB-2 must be turned off for a minimum of 5 seconds and then turned back on. If the short circuit has been corrected, the unti will then play normally.

*** LED POWER INDICATORS**
Both channels are provided with six LED's that light up progressively as the output power is increased to 30 W (RMS) channel. These lights will fluctuate on and off as the power level varies in direct relation to the music being played.

*** INPUT FLOATING FOR BTL OUTPUT SYSTEM**
This unit has been specially designed, can be used for not only BTL output system but non-BTL car stereos.

*** LINE INPUT**
The LINE INPUT JACKS can be for use only with radio/tape players that have line output connections.



1. EQUALIZER CONTROLS
Each slide control affects a different frequency band. A detent in the center position of each control locks it to the "flat" setting. Sliding the control knob upwards boosts sounds in that frequency band; sliding it downwards cuts sounds in that band. Lines on the faceplate indicate the amount of boost or cut (in dB) at the center frequency. The position of the slide control knobs provides a visual representation of the frequency response.

2. FRONT/REAR FADER CONTROL
Turning this knob counter-clockwise brings up the level of the front speakers and lowers the level of the rear speakers. Turning it clockwise has the opposite effect. At mid-position, both sets of speakers are at maximum level.

3. LED OUTPUT POWER INDICATORS

These lights will fluctuate on and off as the power level varies in direct relation to the music being played.

4. POWER SWITCH

Depressing this button turns the 300EQB-2 on and off. With the button in, the unit is on and all controls may be used. With the button out, the unit is off. In the off position, the speakers are re-connected to the car stereo unit, and the fader control is still functional. This feature allows a "before and after" comparison.

5. POWER INDICATOR

Light-emitting diode with Clarion mark glows orange whenever the 300-EQB–2 is turned on.

NOTE: In installations which use only one set of speakers, the fader control should be turned to the position which provides the loudest sound and left in that position.

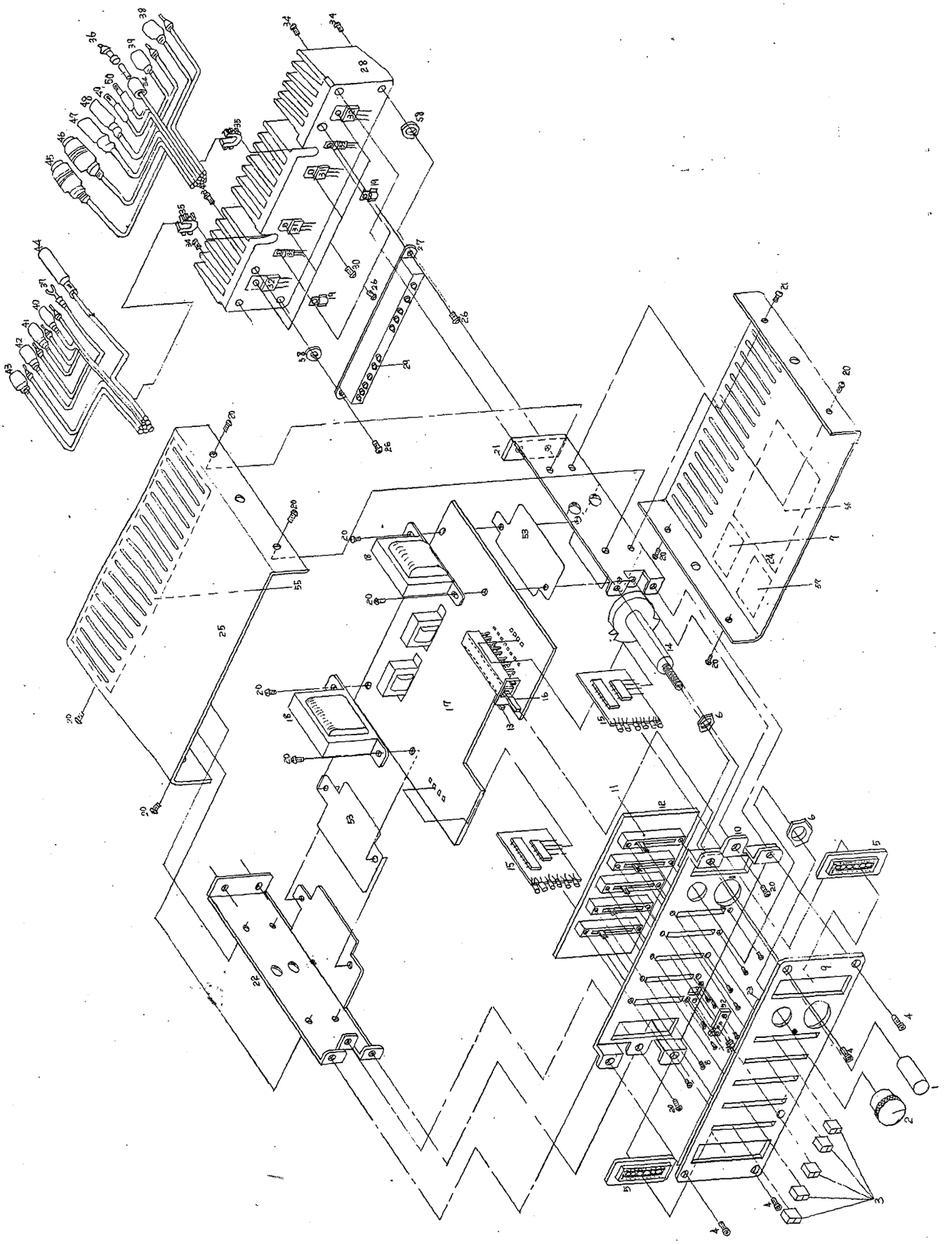
■PARTS LIST:

< MAIN SECTION >

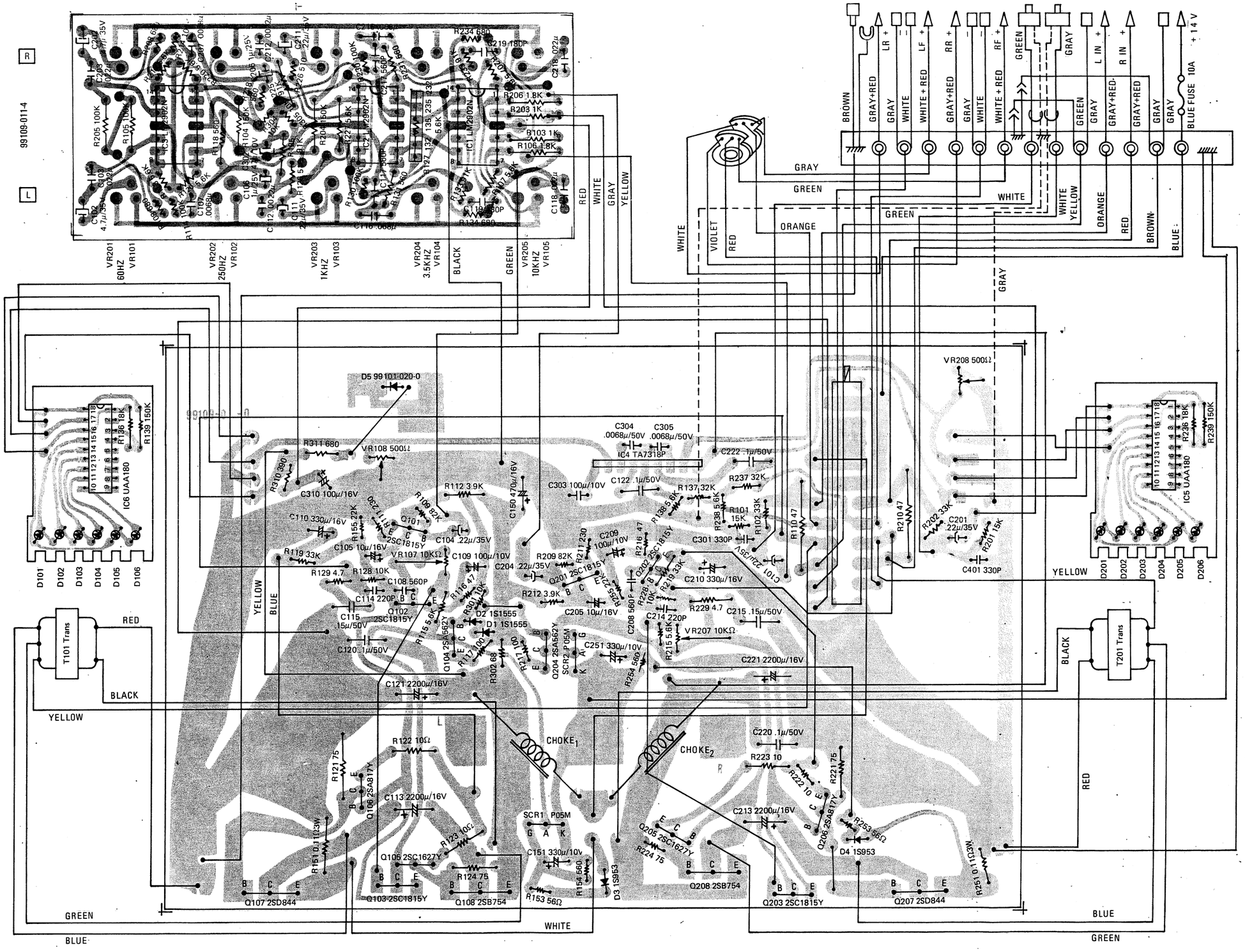
Ref. No.	Part No.	Description	Pcs.
1	99237-005-0	BUTTON	1
2	99236-008-0	KNOB	1
3	99236-007-1	KNOB	5
4	99300-019-0	SCREW	4
5	99263-014-0	LED PANEL	2
6	99301-007-0	SPECIAL NUT	2
7	99220-017-0	SET PLATE	1
8	99300-001-0	SCREW	11
9	99230-007-1	ESCUTCHEON	1
10	99253-002-1	FRONT PLATE	1
11	99150-008-0	VARIABLE-R	5
12	99109-011-5	P.W.B.	1
13	99260-020-1	S.W. BRACKET	1
14	99150-009-1	FADER VR	1
15	99109-013-1	P.W.B.	2
16	99160-010-0	PUSH SW	1
17	99491—001—0	LED PWB ASSY	1
18	99158-001-0	OUTPUT TRANS	2
19	99260-045-0	TR. PLATE	2
20	99300-003-0	SCREW	14
21	99260-039-0	R—PLATE	1
22	99260-040-0	L—PLATE	1
23	99256-003-0	SHADE	1
24	99252-003-1	LOWER CASE	1
25	99251-004-1	UPPER CASE	1
26	99300-022-0	TAPTIGHT	2
27	99255-002-2	FILTER CASE	1
28	99254-013-0	HEAT SINK	1
29	99105-001-0	FEED THROUGH	11

Ref. No.	Part No.	Description	Pcs.
30	99300-017-1	TAPTIGHT	6
31	99100-004-0/1	TRANSISTOR	2
32	99100-005-0/1	TRANSISTOR	2
33	99100-006-0	TRANSISTOR	6
34	99300-026-0	SCREW	4
35	99263-023-0	MOLDED PART	2
36	99350-004-1	A—LEAD	1
37	99352-001-1	BONDING WIRE	1
38	99351-002-2	SP—LEAD (IN)	1
39	99351-003-2	SP—LEAD (IN)	1
40	99351-007-2	SP—LEAD (RF)	1
41	99351-006-2	SP—LEAD (RR)	1
42	99351-005-2	SP—LEAD (LF)	1
43	99351-004-2	SP—LEAD (LR)	1
44	99355-018-0	CONNECTING WIRE	1
45	99355-022-0	RCA JACK	1
46	99355-021-0	RCA JACK	1
47	99355-019-0	CONNECTING WIRE	1
48	99355-019-1	CONNECTING WIRE	1
49	99355-020-0	CONNECTING WIRE	1
50	99355-020-1	CONNECTING WIRE	1
51	99101-020-0	SPECIAL LED	1
52	99109-030-1	P.W.B.	1
53	99265-004-0	PAPER PART	2
54	99350-003-1	A—LEAD	1
55	99256-002-0	SHADE	1
56	99221-010-1	WIRE CNT	1
57	99221-001-0	GUIDE LABEI	1
58	99302-025-0	SPRING WASHER	2

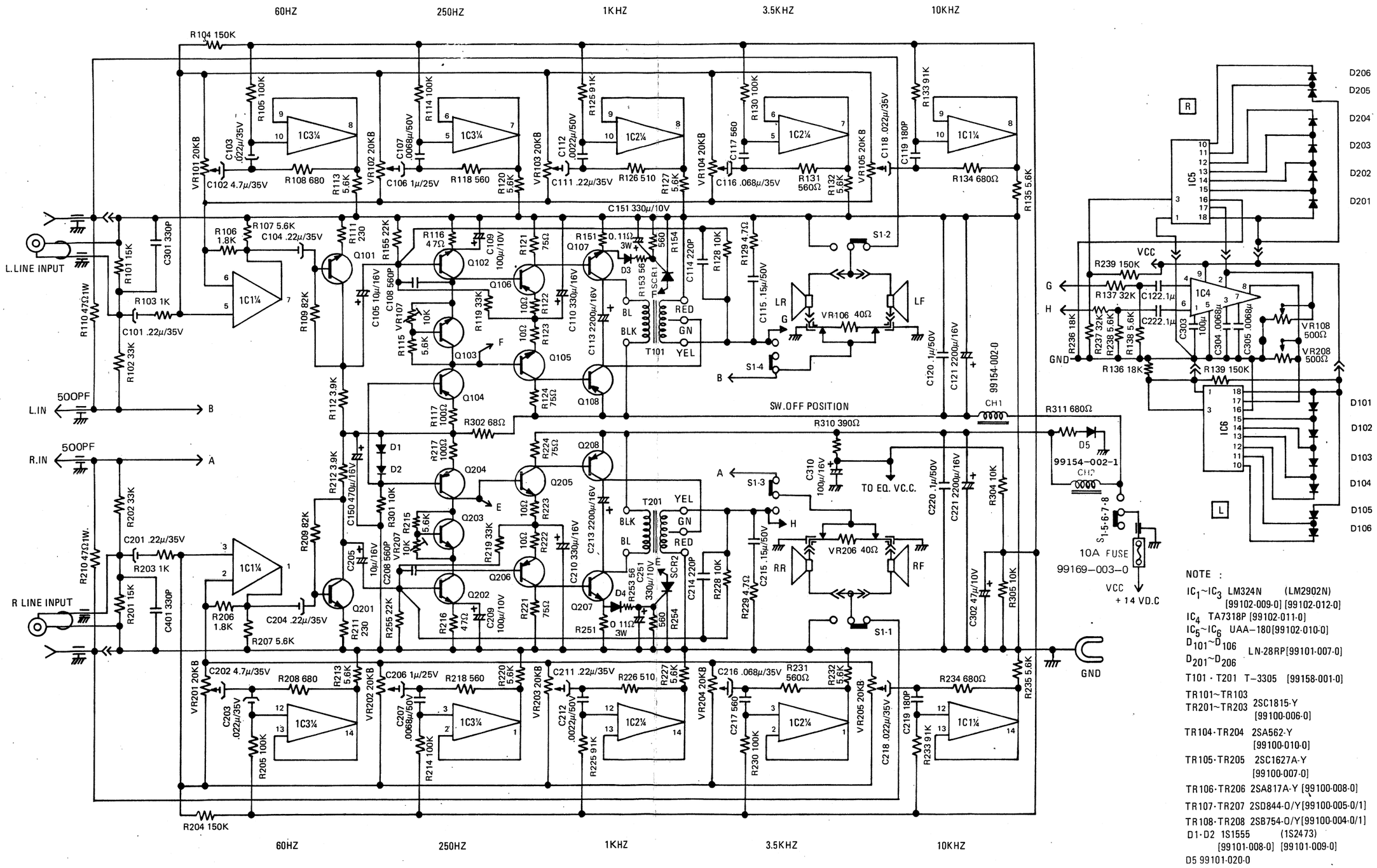
EXPLODED VIEW:



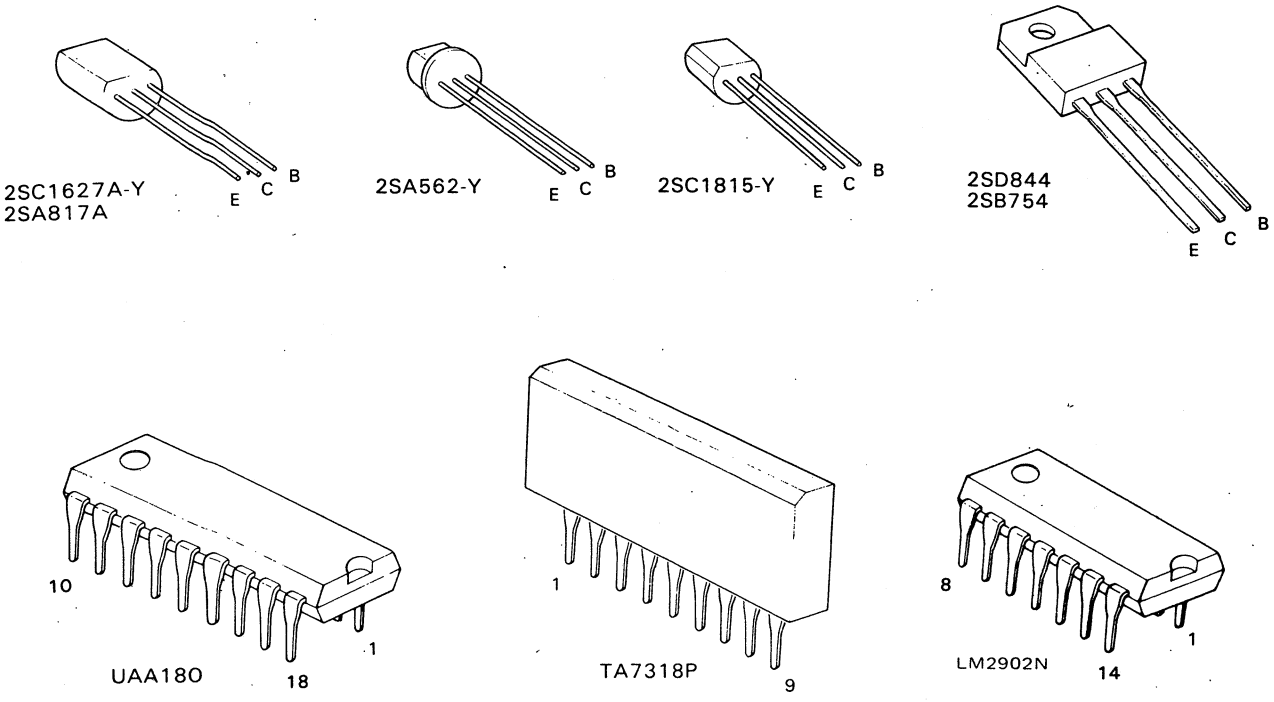
■PRINTED WIRING BOARD:



■ CIRCUIT DIAGRAM:



■SEMICONDUCTORS OUTER VIEW:



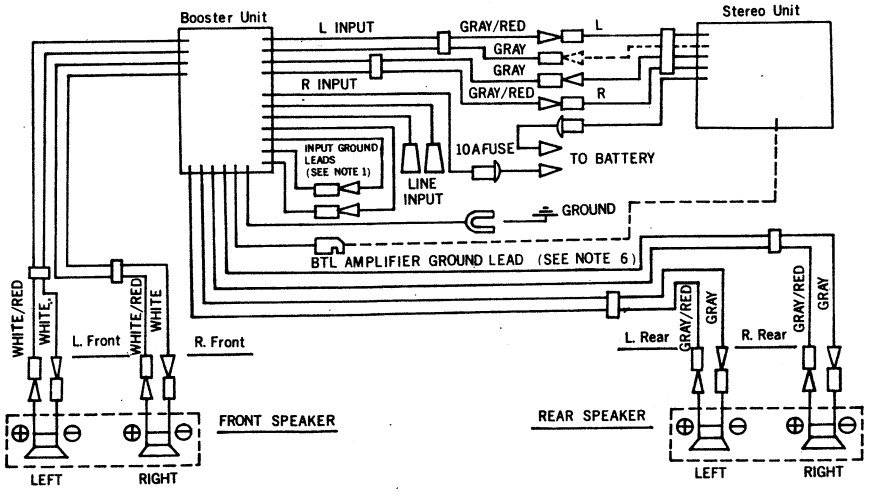
■CONNECTIONS:

FOR 4-SPEAKER INSTALLATIONS

The speaker load connected to each output cable of the 300EQB-2 must have an impedance of not less than 8 ohms. Be certain that none of the speaker leads are connected to ground (chassis) to prevent damage. Use two-conductor wire from each speaker.

FOR 2-SPEAKER INSTALLATIONS

The speaker load connected to each output cable of the300EQB-2must have an impedance of not less than 4 ohms. The front and rear output leads of each channel may be connected together (striped-to-striped; unstriped-to-unstriped) if it is desired to render the fader control inoperative. Otherwise, all unconnected output leads of the300EQB-2must be taped up or insulated by some other means. Be certain that none of the speaker leads are connected to ground (chassis) to prevent damage. Use two-conductor wire from each speaker.



■PARTS LIST:

< ELECTRICAL SECTION >

Ref. No.	Part No.	Description	Q'ty
C101,201,104 204,111,211		Electrolytic-c .22μ/35V	6
C106,206		Electrolytic-c 1μ/25V	2
C102,202		Electrolytic-c 4.7μ/35V	2
C116,216		Polyester-c .068μ/50V	2
C103,203,118 218		Polyester-c .022μ/50V	4
C150		Electrolytic-c 470μ/16V	1
C113,213,121 221		Electrolytic-c 2200μ/16V	4
C302		Electrolytic-c 47μ/10V	1
C109,209,303		Electrolytic-c 100μ/10V	3
C151,251		Electrolytic-c 330μ/10V	2
C110,210		Electrolytic-c 330μ/16V	2
C310		Electrolytic-c 100μ/16V	1
C105,205		Electrolytic-c 10μ/16V	2
C301,401		Ceramic-c 330PF/50V	2
C219,119		Ceramic-c 180PF/50V	2
C108,208,117 217		Ceramic-c 560PF/50V	4
C114,214		Ceramic-c 220PF/50V	2
C220,120,122 222		Polyester-c .1μ/50V	4
C115,215		Polyester-c .15μ/50V	2
C112,212		Polyester-c .0022μ/50V	2
C107,207,304 305		Polyester-c .0068μ/50V	4
R125,133,225 233		Film resistor 91K 1/8W	4
R105,114,130 205,214,230		Film resistor 100K 1/8W	6
R122,123,222, 223		Film resistor 10Ω 1/2W	4
R117,217		Film resistor 100Ω 1/8W	2
R111,211		Film resistor 230Ω 1/8W	2
R155,255		Film resistor 22K 1/8W	2
R301,128,228 304,305		Film resistor 10K 1/8K	5
R101,201		Film resistor 15K 1/8W	2
R136,236		Film resistor 18K 1/8W	2
R112,212		Film resistor 3.9K 1/8W	2
R310		Film resistor 390Ω 1/8W	1
R137,237		Film resistor 32K 1/8W	2
R109,209		Film resistor 82K 1/8W	2
R110,210		Film resistor 47Ω1W	2
R302		Film resistor 68Ω 1/2W	1
D5	99101-020-0	SPECIAL LED	1

Ref. No.	Part No.	Description	Q'ty
R108,208,134 234		Film resistor 680Ω 1/8W	4
R121,221,124 224		Film resistor 75Ω 1/2W	4
R129,229		Film resistor 4.7Ω 1/2W	2
R311		Film resistor 680Ω 1/2W	1
R151,251		Film resistor 0.11Ω3W	2
R104,204,139 239		Film resistor 150K 1/8W	4
R102,202,119 219		Film resistor 33K 1/8W	4
R106,206		Film resistor 1.8K 1/8W	2
R116,216		Film resistor 47Ω 1/8W	2
R107,207,115 215,113,213 220,227,120 138,238		Film resistor 5.6K 1/8W	11
R126,226		Film resistor 510Ω 1/8W	2
R118,218,154 254,131,231		Film resistor 560Ω 1/8W	6
D1,2	99101—008—0	Diode 1S1555	2
D3,4	99101—004—0	Diode 1S953	2
SCR1,2	99100—011—0	Diode 03P05M	2
D101,102,103 104,105,106 201,202,203 204,205,206	99101—010—0	LED LN28RP	12
Q101,102,103 201,202,203	99100—006—0	Transistor 2SC1815Y	6
Q105,205	99100—007—0	Transistor 2SC1627Y	2
Q106,206	99100—008—0	Transistor 2SA817Y	2
Q107,207	99100-005-0/1	Transistor 2SD844	2
Q108,208	99100-004-0/1	Transistor 2SB754	2
Q104,204	99100—010—0	Transistor 2SA562Y	2
IC1,2,3	99102—012—0	IC LM2902N	3
IC5,6	99102—010—0	IC UAA180	2
IC4	99102—011—0	IC TA7318P	1
R235,127,132 135,232	99173—003—0	Component circuit 5.6KΩ	1
S1-4,1-2 1-1,1-3	99160—010—0	Power switch	1
VR107,207	99150—011—0	Variable resistor 10KΩ	2
VR108,208	99150—010—0	Variable resistor 500Ω	2
VR106,206	99150—009—1	Variable resistor 50Ω (40Ω)	1
VR101,102 103,104,105 201,202,203 204,205	99150—008—0	Variable resistor 20KΩ	5
CH1,2	99154-002-0/1	Choke	2
T101,201	99158—001—0	Trans	2
R153,253		Film resistor 56Ω 1/8W	2
R103.203		Film resistor 1K 1/8W	2